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WE CLAIM:

- 1. A method for the identification of a systemic autoimmune disease in a test subject suspected of suffering from an otherwise unidentified systemic autoimmune disease selected from the group consisting of systemic lupus erythmatosus, scleroderma, Sjögren's syndrome, polymyositis, dermatomyositis, CREST, and mixed connective tissue disease, said method comprising:
 - (a) analyzing a single biological sample from said test subject for the presence and amounts of a plurality of autoantibodies to produce a test data set;
 - (b) comparing said test data set to a library of reference data sets, each reference data set obtained from a biological sample of a reference subject known to have a systemic autoimmune disease of known identity; and
 - (c) applying pattern recognition means to produce a statistically derived decision indicating which systemic autoimmune disease said test subject is suffering from.
- 2. A method in accordance with claim 1 in which said test subject is suffering from two systemic autoimmune diseases, and step (c) comprises applying pattern recognition means to produce a statistically derived decision indicating which two systemic autoimmune diseases said test subject is suffering from.
- 3. A method in accordance with claim 1 in which said pattern recognition means is a member selected from the group consisting of k-nearest neighbor analysis, multi-linear regression analysis, Bayesian probabilistic reasoning, neural network analysis, and principal component analysis.
- 4. A method in accordance with claim 1 in which said pattern recognition means is a k-nearest neighborhanalysis.
- 5. A method in accordance with claim 1 in which said plurality of autoantibodies numbers from 10 to 100 autoantibodies.
- 6. A method in accordance with claim 1 in which said plurality of autoantibodies numbers from 15 to 25 autoantibodies.
- 7. A method in accordance with claim 1 in which said plurality of autoantibodies comprises antibodies to at least fifteen of the following antigens:

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	3	S SA 60
	4	S\$A 60
	5	S\$A 52
	6	S\$B 48
	7	Sm BB'
٠.	8	Sm D1
	9	RNP 68
1	0	RNP A
1	.1	RNP C
1	2	Fibrillarin
1	3	Riboproteins P0, P1, and P2
1	4	dsDNA
1	5	Nucleosome
9 1	6	Ku
	7	Centromere A
<u> </u>	8	Centromere B
I 1	9	Scl-70
# 2	0	Pm-Sql
22342	1	RNA-Polymerases 1, 2, and 3
<u> </u>	2	Th \
	3	Jo-1
2	4	Mi-2
2	5	PL7
2	6	PL12
2	7	SRP
	1	8. A method in accordance with claim 1 in which said plurality of
	2 autoantibodies	s comprises antibodies to each of the following antigens:
	3	SSA 60
	4	SSA 60
	5	SSA 52
	6	SSB 48
	7	Sm BB'
	8	Sm D1

9	RNP 68
10	RNP A
11	RNP C
12	Fibrillarin
13	Riboproteins P0, P1, and P2
14	dsDNA ·
15	Nucleosome
16	Ku \
17	Centromere A
18	Centromere B
19	Scl-70 \
20	Pm-Scl
21	RNA-Polymerases 1, 2, and 3
22	Th
23	Jo-1
24	Mi-2
25	PL7
26	PL12
27	SRP
	N

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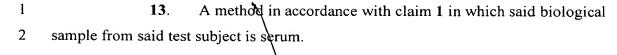
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- 9. A method in accordance with claim 1 in which said library of reference data sets represents from 100 to 10,000 biological samples from reference subjects known to have systemic autoin mune diseases of known identity.
- 10. A method in accordance with claim 1 in which said library of reference data sets represents from 200 to 2000 biological samples from reference subjects known to have systemic autoimmune diseases of known identity.
- 11. A method in accordance with claim 1 in which step (c) further comprises assigning a confidence level to said determination.
 - 12. A method in accordance with claim 1 in which said biological sample from said test subject is a member selected from the group consisting of serum, plasma, urine, and cerebrospinal fluid.

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- 14. A method in accordance with claim 1 in which step (a) is performed by immunoassay.
- 15. A method in accordance with claim 1 in which step (a) is performed by immunoassay with fluorescence detection.
- 1 16. A method in accordance with claim 1 in which said systemic 2 autoimmune disease is systemic lupus erythmatosus.